United States Department of the Interior
Bureau of Land Management

Eastern States
Southeastern States District Office
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http://www.es.blm.gov

Environmental Assessment
EA-020-2015-22

Project Name: Wilson 9-17 #9-21H23 through #13-21H23 APDs EA

Date: September 18, 2015

CH 1 – PURPOSE OF AND NEED FOR THE PROPOSED ACTION

Introduction

On February 23, 2015, SEECO, Inc. submitted five Applications for Permit to Drill (APD) for the proposed: Wilson 9-17 #9-21H23, Wilson 9-17 #10-21H23, Wilson 9-17 #11-21H23, Wilson 9-17 #12-21H23, and Wilson 9-17 #13-21H23 natural gas wells to the Bureau of Land Management (BLM), Southeastern States District Office (SSDO). The proposed Wilson 9-17 wells will be located on private property approximately 1.2 miles northeast of the community of Jerusalem, Arkansas off of Jasper Loop Road. The five APDs were submitted in accordance with Onshore Oil and Gas Order No. 1 (43 CFR 3164), administered by the BLM. The wells, if approved, will drill into federally owned and leased oil and gas. The leasing and development of federal oil and gas minerals is authorized by several statutes including: The Mineral Leasing Act, as amended and supplemented (30 U.S.C. 181), and The Mineral Leasing Act for Acquired Lands, as amended (30 U.S.C. 351-359).

Need for the Proposed Action

An APD is a proposed action under BLM jurisdiction requiring federal approval for a permit to drill and as such must be reviewed for compliance with various statutes, laws and regulations including the National Environmental Policy Act of 1969 (NEPA), as amended (Public Law 91-90, 42 U.S.C. 4321 et seq.).

A federal oil and gas lease is a legal contract that grants exclusive rights to the lessee to drill for and remove all oil and gas from the lease with the right to build and maintain necessary improvements. The subject lease was issued by the BLM following a decision by the Authorized Officer to allow leasing of the oil and gas rights on the property. The leasing decision and leasing action represent a commitment to allow exploration and development of potential oil and gas resources on the property. Hence, the drilling activity on the lease constitutes a valid lease right and is needed in order to fulfill the purpose and intent of the lease.

SEECO, Inc. submitted five APDs in accordance with Onshore Order #1 as directed by BLM for the development of oil and gas resources under BLM jurisdiction. BLM's responsibility is to review such applications in accordance with federal and state laws, policies, and regulations so that oil and gas resources can be developed in a way that is beneficial to the American public as well as ensure the U.S. Government's oil and gas interests are not being drained and/or trespassed on.

Management Objectives of the Action

The desired outcome of the proposed action is the approval of SEECO, Inc.'s five APDs for the extraction of natural gas submitted to BLM. Approval of the APDs from SEECO, Inc. would allow the extraction and production of federally owned natural gas. Not approving these natural gas wells would stop the development of federal minerals in this area and create a loss of royalties to the federal government.

Land Use Plan Conformance

This area is not covered by a BLM Resource Management Plan. According the regulations at 43 CFR 1610.8 (b) (1), however, this environmental assessment can be used as a basis for making a decision on the proposal. The federal lease: ARES-54981 was analyzed and approved by a

previous environmental assessment. Lease stipulations formed from those environmental assessments apply to the lease and are considered in the analysis of this action.

Applicable Regulatory Requirements and Required Coordination

Applicable Regulatory Requirements and Required Coordination include: The Mineral Leasing Act, as amended and supplemented (30 U.S.C. 181), The Mineral Leasing Act of 1947, as amended (30 U.S.C. 351-359), Leasing Reform Act of 1987, 43 CFR 3162.3, 43 CFR 3162.5, Onshore Oil & Gas Order No. 1, Energy Policy Act of 2005, NEPA, Arkansas Department of Environmental Quality (ADEQ), The National Historic Preservation Act of 1966 (NHPA), The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.

The following tribes were contacted for cultural compliance under Section 106 of the NHPA:

- Quapaw Tribe of Oklahoma
- Osage Nation
- Choctaw Nation of Oklahoma
- Chickasaw Nation
- Cherokee Nation of Oklahoma
- United Keetoowah Band of Cherokee Indians in Oklahoma
- Seminole Nation of Oklahoma
- Muscogee (Creek) Nation of Oklahoma
- Thlopthlocco Tribal Town
- Caddo Indian Tribe of Oklahoma
- Tunica-Biloxi Tribe of Louisiana
- Alabama-Quassarte Tribal Town

State and/or Federal Agencies contacted by BLM staff:

- Arkansas Historic Preservation Program, State Historic Preservation Officer (SHPO)
- U.S. Fish and Wildlife Service, Arkansas Ecological Services Office

The following BLM employees attended an onsite visit on December 4, 2014:

(1) Alison McCartney, SSDO Natural Resource Specialist
(2) Duane Winter, SSDO ADM for Natural Resources

Decision(s) That Must Be Made

The BLM has two decisions under consideration for the proposed action of approving the five APDs submitted by SEECO, Inc. The "Proposed Action" and the "No Action" options are considered the only two reasonable alternatives under decision by BLM. No issues were raised during the scoping process and/or onsite inspection that would suggest or identify other alternatives for consideration. The No Action alternative is considered and analyzed to provide a baseline for comparison of the impacts of the proposed action.

The first and preferred decision for consideration is the approval of the five proposed APDs submitted by SEECO, Inc., which will be co-located on the same proposed well pad in Conway County, Arkansas. The preferred decision would allow the drilling of the five natural gas wells

to protect federal mineral interests from being drained from nearby oil and gas production. Approving the APDs would give SEECO, Inc. the permission to begin developing the federal minerals of lease ARES-54981; in return the U.S. Government would be paid royalties for those minerals developed. The no action or second decision to consider would be to not approve the APDs submitted by SEECO, Inc. If the second decision was proven to be the appropriate and best course of action by BLM, the proposed wells for the APDs submitted would not be recommended by BLM to SEECO, Inc. for development or any future submittal of APDs for that location. Royalties would not be collected and drainage of federal minerals could potentially occur from the neighboring private leases. This EA will discuss and review all SSDO NEPA elements taken under consideration to provide management with the best decision appropriate for all proposed actions. BLM's policy is to promote oil and gas development as long as it meets the guidelines and regulations set forth by NEPA and other subsequent laws and policies passed by the U.S. Congress.

CH 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION

Introduction

The SSDO has reviewed the APDs submitted by SEECO, Inc. for the proposed Wilson 9-17 #9-21H23, Wilson 9-17 #10-21H23, Wilson 9-17 #11-21H23, Wilson 9-17 #12-21H23, and Wilson 9-17 #13-21H23 wells. All five APDs are proposed natural gas wells and are located are on private property in Conway County, Arkansas.

APD Location

Wilson 9-17 #9-21H23 - 1735' FNL and 355' FEL in Section 21, T. 9 N., R. 17 W.; 5th Principal Meridian, Conway County, Arkansas

Wilson 9-17 #10-21H23 - 1675' FNL and 355' FEL in Section 21, T. 9 N., R. 17 W.; 5th Principal Meridian, Conway County, Arkansas

Wilson 9-17 #11-21H23 - 1695' FNL and 355' FEL in Section 21, T. 9 N., R. 17 W.; 5th Principal Meridian, Conway County, Arkansas

Wilson 9-17 #12-21H23 - 1715' FNL and 355' FEL in Section 21, T. 9 N., R. 17 W.; 5th Principal Meridian, Conway County, Arkansas

Wilson 9-17 #13-21H23 - 1615' FNL and 355' FEL in Section 21, T. 9 N., R. 17 W.; 5th Principal Meridian, Conway County, Arkansas

Proposed Action (Preferred Option)

The proposed action is to approve five wells co-located on private property submitted by SEECO, Inc. SEECO will utilize and re-open the reserve pits for each existing well site. SEECO, Inc. provided plats detailing the existing well pad designs and area of coverage for the proposed APDs. The proposed federal wells will be drilled horizontally and hydraulically fractured for gas development. Drilling plans for the wells were submitted with the APDs and has been reviewed by BLM as part of the approval process. The proposed action will involve approximately 9.35 acres of total surface disturbance for construction of a well pad, reserve pit, and access road.

Construction

The specific plans for construction of a site are included in the Surface Use Plan (SUP) of an APD. The SUP is incorporated by reference into this EA, is maintained in the appropriate well file at the BLM, SSDO, and is available for review.

The proposed APDs are co-located on the same proposed well pad which utilizes a square-shaped well pad (600' X 600') approximately 8.25 acres of disturbance in size. The well pad area will be leveled for support of a drilling rig. A reserve pit will be constructed on the downhill side (east end) of the well pad for discharge of the drilling fluids. The reserve pit is 200' X 250' approximately. The access road and right-of-way (ROW) dimensions are 30' X 1654' being approximately 1.1 acres in disturbance on private land across a wooded area into a field used by the land owner for hay production and/or cattle. The pad's elevation is at ± 743'. Other design features are included in the SUP.

Drilling Operations

The specific plans for drilling operations are included in the Drilling Programs (DP) of each APD submitted by SEECO, Inc. This program is incorporated by reference into this EA. The DP is maintained in the well file for each APD at the BLM, SSDO and is available for review. The Wilson 9-17 APDs will be hydraulically fractured and horizontally drilled to a depth of approximately 4,700 feet total volume depth (TVD). The casing and cementing program for each APD submitted is reviewed by BLM and, if necessary, will be modified to meet BLM standards, if an issue of safety or integrity is found. BLM regulations require that the operator isolate freshwater-bearing strata and other usable safe drinking water formations containing 10,000 ppm or less of dissolved solids, and other mineral-bearing formations, and protect them from contamination (43 CFR 3162.5-2d). Surface casing would be placed below surface and cemented back to the surface to protect usable safe drinking water. The circulated mud and drilling fluids will be contained onsite in tanks due to the operator using a "closed-loop" system. Cuttings will be discharged into a reserve pit. SEECO, Inc. will transport by truck any material and fluids needed in their operations for drilling.

The blowout prevention program has been reviewed by BLM for assurance that, in the event of a blowout, each well can be controlled. SEECO, Inc. provided BLM the details of the well's production casing in the APD. The production casing of each well is in accordance with BLM regulations/standards. Other design features pertaining to drilling are included in the DP.

Production Operations

Each well when completed will result in natural gas production. Production equipment will be put in place located on the well pad site for all wells. Production and gathering lines are detailed in the facility diagram which is part of each APD and DP submitted. Lines leaving the well pad will be laid in the well site's road right-of-way (ROW) established by the private landowner. Any new facilities or lines will have to be approved by BLM by a Sundry Notice. Any new surface disturbance is subject to NEPA review. Any production facilities will be reviewed by BLM as part of the APD approval process to ensure proper construction, usage, and management.

Reclamation

The reclamation plan applies to all disturbed areas following a dry hole or abandonment of any well and to all areas not needed for production of that producing well. A well will be plugged after completion and no limbs, trees, or tops will be placed in the reserve pit. Other aspects of the project relative to reclamation are addressed in the surface use conditions of approval (SUCOA) submitted by BLM. Upon final abandonment and reclamation, BLM will inspect the plugging operations completed by SEECO, Inc. and inspect final reclamation of the site to ensure it has met BLM reclamation standards. The well site is located on private surface. If a private landowner has no plans for final reclamation and the federal well is the last well to be plugged for this location, BLM will propose that SEECO, Inc. restore the well site to conditions that existed prior to pad construction for final reclamation approval. Plugging and reclamation stages are subject to BLM's approval before the well site can be released from SEECO, Inc.'s responsibility and liability.

No Action

The only other alternative to the decision being considered by BLM is "No Action". The "No Action" decision result would be to not authorize the five proposed APDs submitted by SEECO, Inc. to BLM. Without approval, potential drainage from private wells neighboring the federal lease could occur. The "No Action" alternative would potentially jeopardize BLM's policy to promote oil and gas development as long as it meets the guidelines and regulations set forth by NEPA and other subsequent laws and policies passed by the U.S. Congress.

CH. 3 – DESCRIPTION OF THE AFFECTED ENVIRONMENT

Introduction

Based on review of the elements listed on the SSDO NEPA Form and consideration of the Purpose and Need statement prepared for this EA, the following elements will be addressed in this EA: Environmental Justice, Cultural Resources, Native American Religious Concerns, Recreation/Visual/Noise Resources, Minerals and Mineral Development, Energy Policy, Wastes, Hazardous or Solid, Soils, Air Resources, Climate and Climate Change, Water Resources, Surface/Ground, Wetlands/Riparian Areas/Floodplains, Invasive/Exotic Species, Special Status Species, and Wildlife and Vegetation.

Description of Project Area

This area is situated in the Arkansas Valley Eco-region in Northern Arkansas. The Arkansas Valley Eco-region is a synclinal and alluvial valley lying between the Ozark Highlands and the Ouachita Mountains. The Arkansas Valley is, characteristically, diverse and transitional. It generally coincides with the Arkoma Basin that developed as sand and mud were deposited in a depression north of the rising Ouachita Mountains during the Mississippian and Pennsylvanian eras. The Arkansas Valley contains plains, hills, floodplains, terraces, and scattered mountains. It is largely underlain by inter-bedded Pennsylvanian sandstone, shale, and siltstone. Prior to the 19th century, uplands were dominated by a mix of forest, woodland, savanna, and prairie whereas floodplains and lower terraces were covered by bottomland deciduous forest. Today, less rugged upland areas have been cleared for pastureland or "hayland" (land used for the production of hay). Poultry and livestock farming are important land uses.

The proposed well site is located on private property in rural Conway County, Arkansas. The land is currently utilized as a field for hay production and/or for cattle. The proposed access road crosses private property consisting of mixed hardwood and pine, which is south and adjacent to the field in which the well pad is proposed. The surrounding area is primarily rural land which landowners utilize for agriculture, hunting and timber production. The location for the proposed well pad has a level to rolling topography.

Environmental Justice

Title IV of the Civil Rights Act of 1964 and related statutes ensure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal assistance on the basis of race, color, national origin, age, sex, or disability. Executive Order 12898 on Environmental Justice directs that programs, policies, and activities not have a disproportionately high and adverse human health and environmental effect on minority and low-income populations.

Cultural Resources

The Area of Potential Effect (APE) of this project has been surveyed by Panamerican Consultants, Inc., Jan. 2015. Cultural resources in an area are not necessarily discovered during a survey. There is a potential that buried sites may be present. These sites, if any, might be potentially eligible for listing on the National Register of Historic Places.

Native American Religious Concerns

Federally recognized Native American tribes were contacted regarding the proposed project. Associated sites of Native American religious practices or Traditional Cultural Properties have not been identified within the boundaries of the proposed disturbance. However, there has been prehistoric sites (36CFR800) identified within one and one half mile of the project area that may be impacted by this action. This surface tract is privately owned. The BLM has no jurisdiction over surface access on the lands covered by this action and thus, can neither allow nor not disallow access to lands involved in this action. The BLM can only suggest that access be allowed. However, if unknown religious sites, prehistoric sites and burials are discovered during the activities associated with this action, additional consultation with the appropriate Native American groups and the Arkansas SHPO will take place.

Recreation/Visual/Noise Resources

Boating, ATV riding, horseback riding, fishing and hunting are the normal outdoor recreation for this area. Conway County, Arkansas has abundant resources and land (private and government) available to accommodate these types of activities. However, access to these recreational resources can be limited due to remoteness or private property in this area. Adjacent properties to the proposed well site are private lands. The closest government property for public recreation is the Ozark National Forest which is approximately 2 miles away to the north.

The visual resources found in the project area consist of wooded areas, hay fields, cattle and chicken farms, small house structures, a county roads, secondary roads, existing well pads, and small ponds/lakes.

Existing sources of noise are limited to petroleum development activities, vehicular traffic on state highways, county roads and other existing secondary roads, and/or private landowners nearby.

Minerals and Mineral Development

SEECO, Inc's target geologic formation for natural gas production is the Fayetteville Shale. The Fayetteville Shale, which underlies much of northern Arkansas and adjacent states, is a black, organic-rich rock of Mississippian age that is the geologic equivalent of the Caney Shale found on the Oklahoma side of the Arkoma Basin and the Barnett Shale found in north Texas. The Fayetteville Shale is an unconventional natural gas reservoir located on the Arkansas side of the Arkoma Basin, ranging in thickness from 50 to 600 feet and ranging in depth from 1,500 to 6,500 feet.

Geologic formations may contain large quantities of oil or gas; however, they may have a poor flow rate due to low permeability, or from damage or clogging of the formation that occurred during drilling. This is particularly true for tight sands, shales, and coalbed methane formations such as the Fayetteville Shale. Hydraulic fracturing will be utilized in the drilling process as indicated in the proposed APDs by SEECO, Inc., in order to obtain and develop the natural gas within the Fayetteville Shale. The process occurs after a well has been drilled to a particular depth vertically and possibly drilled a certain distance horizontally through the targeted geologic zone (Figure 1). Steel pipe (casing) will be inserted in the well bore and will be perforated within the target zone(s) that contain oil or gas, enabling production out of the targeted zone(s) when the fracturing fluid is injected at high pressure into the well flowing through the perforations. Eventually, the targeted formation will not be able to absorb the fluid as quickly as

it is being injected and at this point, the pressure created causes the formation to crack or fracture. Once the fractures have been created, injection ceases and some quantity of the fracturing fluids will begin to flow back to the surface. Materials called proppants (e.g., usually sand or ceramic beads), which were injected as part of the fracturing fluid mixture, remain in the target formation to hold open the fractures.

Typically, a mixture of water, proppants and chemicals is pumped into the rock or coal formation. However, there are other ways to fracture wells. In some cases fractures can be created by injecting gases such as propane or nitrogen, and sometimes acidizing occurs simultaneously with fracturing. Acidizing involves pumping acid (usually hydrochloric acid), into the formation, dissolving some of the rock material to clean out pores and enable gas and fluid to flow more readily into the well. Some studies have shown that anywhere from 20-85% of fracturing fluids may remain underground. Used fracturing fluids that return to the surface are often referred to as flowback, and these wastes are typically stored in open pits or tanks at the well site prior to proper disposal or can be reused in developing other wells.

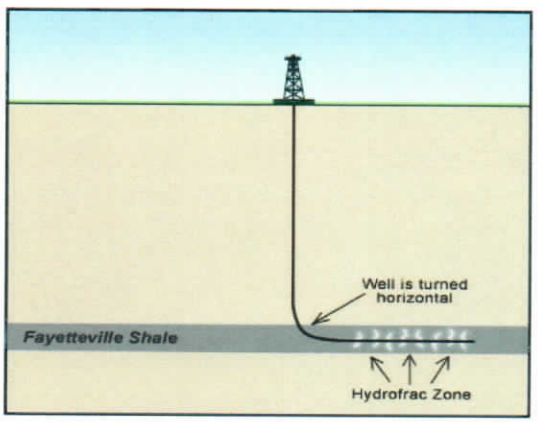


Figure 1. Diagram of hydraulic fracturing of a well.

Energy Policy

As manager of more public land than any other Federal agency, the BLM has a key role in implementing the Energy Policy Act of 2005. The BLM's management of 256 million surface acres and 700 million subsurface acres of mineral estate provides for multiple uses of the land, including energy development. The proposed APDs look to produce gas from approximate depths of 4,700 feet TVD in Conway County, Arkansas.

Wastes, Hazardous or Solid

During the on-site inspection, no solid or liquid waste site (hazardous or non-hazardous) was found in the project area. The private property is utilized for hay production and recreational hunting. From the onsite, nothing in the surrounding area has had signs of being impacted from trash or other waste material.

Soils

The soil types associated with the project area according to the Natural Resource Conservation Service (NRCS) is Linker and Mountainburg.

Linker soils are usually 3 to 8 percent slopes in pasture that had previously been cultivated. Soils are well drained with slow to rapid runoff. Permeability is moderate. Major uses are pasture,

cattle & poultry operations, and woodlands. Dominant vegetation usually includes bermuda grass and bahaiagrass. Wooded vegetation usually includes red oak (*Quercus rubra*), post oak (*Q. stellata*), blackjack oak (*Q. velutina*), sweetgum (*Liquidambar styraciflua*), blackgum (*Nyssa sylvatica*), hickory (*Carya* sp.), shortleaf pine (*Pinus echinata*). Distribution of soils are from the Boston Mountains, Arkansas Valley and Ridges, and Ouachita Highlands of Arkansas, and Oklahoma; Cumberland Plateau and Mountains of Tennessee, Kentucky, and Georgia; and Sand Mountain area of Alabama.

The Mountainburg series consist of shallow, well drained, moderately rapidly permeable soils that formed in residuum of sandstone. These nearly level to very steep soils are found on upland ridgetops, pleateus and mountainsides. Slopes range from 1 to 65 percent. The soils formed in residuum of hard, massive, horizontally bedded sandstone. The mean annual temperature is about 59 degrees F. Average annual rainfall ranges from 42 to 52 inches. Most areas are in woodland. Vegetation is dominantly mixed hardwood forests of upland oaks (*Q.* spp.), elms (*Ulmus* spp.), and hickories, or is in mixed hardwood pine-forest. Minor areas have been cleared and are in pasture.

Air Resources

The Clean Air Act of 1970, as amended, requires the establishment of National Ambient Air Quality Standards (NAAQS). Both primary and secondary standards are now in effect. Primary standards define levels of air quality that the Administrator of the Environmental Protection Agency (EPA) judges to be necessary, with an adequate margin of safety, to protect the public health. Secondary standards define levels of air quality that the Administrator of the EPA judges to be necessary to protect the public from any known or anticipated adverse effects of a pollutant. The NAAQS pollutants are monitored in Arkansas by ADEQ. These include carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, total suspended particulate, particulate matter less than 10 microns, and lead. The area of the proposed well is within standard ranges for air quality. No emissions are present on said property that would be outside the parameters of federal and/or state air emission and quality standards.

Climate and Climate Change

Climate

Arkansas generally has a humid subtropical climate, which borders on humid continental in some northern highland areas. While not bordering the Gulf of Mexico, Arkansas is still close enough to this warm, large body of water for it to influence the weather in the state. Generally, Arkansas has hot, humid summers and cold, slightly drier winters. In Little Rock, the daily high temperatures average around 93 °F (34 °C) with lows around 73 °F (23 °C) in July. In January highs average around 51 °F (11 °C) and lows around 32 °F (0 °C). In Siloam Springs in the northwest part of the state, the average high and low temperatures in July are 89 °F (32 °C) and 67 °F (19 °C) and in January the average high and lows are 44 °F (7 °C) and 23 °F (−5 °C). Annual precipitation throughout the state averages between about 40 and 60 inches (1,000 and 1,500 mm); somewhat wetter in the south and drier in the northern part of the state. Snowfall is infrequent but most common in the northern half of the state. The half of the state south of Little Rock is more apt to see ice storms. Arkansas' all-time record high is 120 °F (49 °C) at Ozark on August 10, 1936; the all-time record low is −29 °F (−34 °C) at Gravette, on February 13, 1905.

Arkansas is known for extreme weather and many storms. A typical year will see thunderstorms, tornadoes, hail, snow and ice storms. Between both the Great Plains and the Gulf State, Arkansas receives around 60 days of thunderstorms. A few of the most destructive tornadoes in U.S. history have struck the state. While being sufficiently away from the coast to be safe from a direct hit from a hurricane, Arkansas can often get the remnants of a tropical system which dumps tremendous amounts of rain in a short time and often spawns smaller tornadoes.

Climate Change

Climate change refers to any significant change in measures of climate (e.g., temperature or precipitation) lasting for an extended period (decades or longer). Climate change may result from natural processes, such as changes in the sun's intensity, natural processes within the climate system (such as changes in ocean circulation), and human activities that change the atmosphere's composition (such as burning fossil fuels) and the land surface (such as urbanization) (Intergovernmental Panel on Climate Change [IPCC] 2013).

Greenhouse gases (GHGs) are gases in the atmosphere composed of molecules that absorb and reradiate infrared electromagnetic radiation. When present in the atmosphere the gas contributes to the greenhouse effect. The greenhouse effect is a process by which thermal radiation from a planetary surface is absorbed by atmospheric GHGs and is re-radiated in all directions. Since part of this re-radiation is back towards the surface and the lower atmosphere, it results in an elevation of the average surface temperature above what it would be in the absence of the gases. Some GHGs such as CO_2 occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHGs (e.g., fluorinated gases) are created and emitted solely through human activities. The primary GHGs that enter the atmosphere as a result of anthropogenic activities include CO_2, CH_4, N_2O, and fluorinated gases such as hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF). Fluorinated gases are powerful GHGs that are emitted from a variety of industrial processes including production of refrigeration/cooling systems, foams and aerosols. Fluorinated gases are not primary to the activities authorized by the FS or BLM and will not be discussed further in this document.

Ongoing scientific research has identified the potential impacts of anthropogenic GHG emissions and changes in biological sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO_2 equivalent (CO_2e) concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. CO_2e is the metric measurement used to compare the emissions for various GHGs based upon their global warming potential (GWP). The CO_2e for a gas is derived by multiplying the tons of the gas by the GWP. The IPCC recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations" (IPCC 2013).

It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of CO_2 can influence climate for 100 years. In contrast, black carbon is a relatively short-lived pollutant, as it remains in the atmosphere for only about a

week. It is estimated that black carbon is the second greatest contributor to global climate change behind CO_2 (Ramanathan and Carmichael 2008). Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 (Goddard Institute for Space Studies 2007). In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences (2006) has confirmed these findings, but also indicated that there are uncertainties regarding how climate change may affect different regions. Observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Data indicates that northern latitudes (above 24° N) have exhibited temperature increases of nearly 1.2°C (2.1°F) since 1900, with nearly a 1.0°C (1.8°F) increase since 1970 alone. It also shows temperature and precipitation trends for the conterminous U.S. For both parameters we see varying rates of change, but overall increases in both temperature and precipitation.

The lack of scientific tools designed to predict climate change at regional or local scales limits the ability to quantify potential future impacts. However, potential impacts to air quality due to climate change are likely to be varied. Oil and gas development activities can generate CO_2 and CH_4. CO_2 emissions result from the use of combustion engines, while CH_4 can be released during processing and development/production of oil and gas resources. Wild land fires also are a source of other GHG emissions, while livestock grazing is a source of CH_4. Currently, the LDEQ does not have regulations regarding GHG emissions, although these emissions are regulated indirectly by various other regulations.

Because GHGs circulate freely throughout Earth's atmosphere, the planning area for this resource is the entire globe. The largest component of global anthropogenic GHG emissions is CO_2. Global anthropogenic carbon emissions reached about 7,000,000,000 metric tons per year in 2000 and about 9,000,000,000 metric tons per year in 2008 (Boden et al 2010). Oil and gas production is a major contributor of GHGs. In 2006, natural gas production accounted for 8% of global CH_4 emissions, and oil production accounted for 0.5% of global CH_4 emissions (URS Corporation 2010).

Water Resources, Surface/Ground

Surface Water

The Arkansas River Valley Region exhibits distinct seasonal characteristics of its surface waters with zero flows common during summer critical conditions. Peak runoff events from within this region tend to introduce contaminants from the predominantly agricultural land use, which are primarily pasture lands with increasing cattle and poultry production. The development of natural gas has resulted in some site-specific water quality degradation. Soil types in much of this area are highly erosive and tend to easily go into colloidal suspension, thus causing long-lasting, high-turbidity values (ADEQ 2008).

Water bodies located in the vicinity of the proposed project area are mostly man-made ponds and creeks/branches. A small tributary from Rock Creek (located approximately 1.5 miles to the east) crosses the wooded tract south of the hay field where the access road is proposed.

Groundwater

Almost all of the surficial aquifers supply water of good to very good quality, ranging from calcium-bicarbonate to sodium-bicarbonate water types. Areas of poor water quality can result from both natural and anthropogenic sources. Natural sources of contamination are typically regional in extent and are related to water-rock interactions. Anthropogenic impacts include both point and nonpoint sources of contamination. Nonpoint sources can result in large areas of impact, although contaminant concentrations typically are significantly lower than point sources, and the contaminants typically represent soluble, non-reactive species. Point sources of contamination often result in elevated levels of contaminants that exceed federal maximum contaminant levels; however, the extent of contamination normally is confined to a small area, with little to no offsite migration or impact on receptors (ADEQ 2008).

The initial Arkansas Nonpoint Source Pollution Assessment (1988) assessed approximately 4,068 miles of stream and found that 58 percent of the assessed streams were not meeting all designated uses. Limited data for the 79 significant publicly owned lakes indicated no use impairment by nonpoint sources. The 1988 assessment identified agriculture and mining as the primary categories of nonpoint source pollution causing impairments to water bodies of the state (ADEQ 2008).

The 1988 assessment was updated in June 1997, using updated assessment criteria. The 1997 report assessed 8,700 stream miles and indicated that nonpoint source pollution was impacting (but not necessarily impairing) more than 4,100 stream miles. Agricultural impacts were identified as the major cause of impacts on 3,197 stream miles. Other major impacts were related to silviculture activities, road construction/maintenance activities, and unknown sources. The unknown source was mercury contamination of fish tissue (ADEQ 2008).

Wetlands/Riparian Areas/Floodplains

The project area is within the Arkansas River valley. Surrounding the well site is farmland, livestock ranching, and timber production. Drainage is usually north to south. The well site area consists of a level to rolling topography. The site is not located within a known flood zone area.

Invasive/Exotic Species

There are a number of non-native species that are considered invasive in Arkansas. The Arkansas State Plant Board and the University of Arkansas Division of Agriculture have published a list of the top ten invasive species in Arkansas, summarized in Table 1 below. No invasive species were observed during the site visit conducted on December 3, 2014, however the tract does contain optimal, suitable or marginal habitat for some of the invasive species below, as noted in the table.

Table 1. List of invasive species documented in Arkansas and the potential to occur on the proposed tract.

COMMON NAME	SCIENTIFIC NAME	DESCRIPTION	APPLICABILITY TO TRACT
Bacteria Leaf Streak of Rice (BLS)	*NA*	Disease affecting rice leafs. Symptoms include thin water soaked interveinal leaf streaks that enlarge, brown, and join together. Typically found in warm, wet, nitrogen rich environments. Hosts include *Leersia, Zizania, Paspalum, Leptochloa, and Zoysia.*	No rice crops identified on or near tract.
Channeled Apple Snail	*Pomacea canaliculata*	Snail poses threats to rice and wetland areas. Snails lay clusters of 200-300 pink colored eggs above water.	Marginal; no suitable water or wetlands on tract.
Cogongrass	*Imperatica cylindrical*	Fast growing weed that outcompetes native plants. Found in fields and spreads through rhizome fragments in soil, farming equipment, soil movement, etc.	Suitable; not observed during site visit.
Hydrellia wirthi	*Hydrellia wirthi*	Small (about 5mm long) fly that attacks and stuns or kills rice seedlings.	No rice crops identified on or near tract.
Hydrilla	*Hydrilla verticillata*	Aquatic weed first observed in Lake Ouachita. Found at or just below the water surface and may extent up to 30 feet deep.	No suitable water on tract.
Old Word Bollworm	*Helicoverpa armigera*	Ornamental plants and flowers as well as crops can host this insect. Looks similar to corn earworm. Not yet detected in Arkansas but ongoing sampling is in effect.	No ornamental plants, flowers or crops on tract.
Rice Nematode	*Ditylenchus angustus*	Microscopic rice disease which distorts rice panicles causing panicle twisting and sterilization.	No rice crops identified on or near tract.
Sirex Wood Wasp	*Sirex noctilio*	Wood wasps that threatens even-aged stands of pines or stressed pines. Has historically caused significant damage to Loblolly Pine.	Suitable habitat present on southern portion of access road.
Sudden Oak Death (SOD)	*(caused by) Phytophthora ramorum*	Fungus-like microorganism causing SOD disease. SOD symptoms include bleeding cankers on lower trunk and leaf spots with dark margins. SOD eventually can lead to death of host. Hosts include numerous varieties of trees and woody ornamentals.	Suitable habitat present on northern half of access road.
Tropical Soda Apple	*Solanum viarum*	Perennial shrub with sharp bards and fruit resembling small watermelons. Declared a noxious weed in 2007. Found in fields, pastures, parks, and possibly open forests.	Suitable.

Source: Top Ten Invasive Species of Concern. Arkansas State Plant Board & University of Arkansas Division of Agriculture. Available online at http://plantboard.arkansas.gov/PlantIndustry/Documents/InvasiveSpeciesGuide.pdf; last accessed March 4, 2013.

Special Status Species

Specific information regarding habitat requirements is provided below for the species listed by U.S. Fish and Wildlife Service (FWS) as endangered, threatened, proposed, or candidate that are documented to occur in Conway County, Arkansas. Details regarding species habitat, habits, threats and other information have been obtained from the Nature Serve website (www.natureserve.org) and cited literature.

Florida Panther (*Felis concolor coryi*) (Endangered)
The Florida panther is ranked as presumed extirpated (SX) by the Arkansas Natural Heritage Commission. Florida is the only state in the U.S. which this species currently occurs and has a state rank of critically imperiled (S1). Habitat loss is the primary threat to this species. The Florida panther can be found in heavily forested areas in lowlands and swamps although it will utilize upland habitats as well. The proposed project site does not provide suitable habitat for this species.

Bald Eagle (*Haliaeetus leucocephalus*) (Delisted)
The bald eagle was delisted in 2007 due to recovery. A five year monitoring program has been established to ensure that bald eagle populations are stable, and that delisting continues to be appropriate for this species. Bald eagles will remain protected under the Bald and Golden Eagle Protection Act, as well as the Migratory Bird Treaty Act. Bald eagles are associated with large inland lakes, large rivers and coastal waters and use large old growth pine, bald cypress and some oak species, usually within ¼ mile of inland lakes and large rivers for nesting and loafing. The closest lake to the proposed project site is eight miles northeast. The project site and surrounding area does not provide suitable habitat for this species.

Piping Plover (*Charadrius melodus*) (Threatened)
The piping plover is a small, stocky, shorebird with a sand-colored upper body, white underside, and orange legs. They grow up to 7 inches long and weigh just 2.25 ounces. Their food consists of worms, fly larvae, beetles, crustaceans, mollusks, and other invertebrates. The piping plover is a migratory bird which often returns to the same nesting area in consecutive years. This species lives near ocean beaches or on sand or algal flats in protected bays. It is most abundant on expansive sandflats, sandy mudflats, and sandy beach in close proximity; usually in areas with high habitat heterogeneity.

Arkansas suitable breeding habitats are wide beaches (> 20 meters) with highly clumped vegetation, having less than 5 percent overall vegetation cover and/or with extensive gravel. There are no water bodies on the tract to support the piping plover.

Northern Long-eared Bat (*Myotis septentrionalis)* (Proposed Endangered)
The northern long-eared bat was listed as threatened under the ESA on April 2, 2015. Population declines for this species are attributed almost solely to White-nose Syndrome, a devastating decease that has killed over 6 million bats since 2006 (Pennsylvania Game Commission 2014).

The northern long-eared bat requires caves or mines to hibernate in during the winter. During the summer months, this species can be found roosting in caves, mines, or buildings, and under loose bark, bridges, or in hollow tree cavities. Research has shown that during the summer months, presence and activity of the northern long-eared bat is highest in forests with late successional characteristics. Late-successional forest characteristics that seem to be important to this species includes a high percentage of old trees (>100 years), uneven forest structure, single and multiple tree fall gaps, standing snags, and woody debris. These characteristics provide a high number of dead or decaying trees that can be used for breeding, summer day roosting, and foraging. The wooded area of the project site does provide suitable foraging and summer roosting habitat for this species.

Interior Least Tern (*Sterna antillarum athalassos*) (Endangered)
The interior least tern is a migratory shorebird species which breeds, nests, and rears young on non-vegetated portions of sand bars and beaches along major rivers and reservoirs. Current FWS guidance recommends that no activity be conducted within 650′ of a nesting colony; and that construction activities within 650-ft. of a nesting colony be conducted outside of the nesting season (May 15 through August 31) to avoid adverse effects to the species. There is no available suitable habitat for this species at the project site.

Wildlife and Vegetation
The 8.25 acres proposed well pad consists almost entirely of active cattle pasture. However, the southern boundary of the proposed pad is wooded. The access road would involve ~ 1.75 acres of disturbance and is currently wooded. Most of the access road location is a mixed hardwood forest although the southern portion of the access road is within a managed pine plantation. Dominant canopy cover species in the mixed hardwood forest include; northern red oak (.), white oak (*Q. alba*), sweetgum (), shortleaf pine (), and Eastern red cedar (*Juniperus virginiana*). An unnamed tributary to Rock Creek is located along the proposed access road. The creek was ~1.5 feet wide and 0.25 feet deep on the date surveyed (December 4, 2014). The surrounding area within a two mile buffer is primarily forested land to the east and north of the project site, cleared land (primarily cattle pasture) to the west and a mixture of cleared and forested land to the south.

Migratory Bird Species of Concern
EO 13188, 66 Fed. Reg. 3853, (January 17, 2001) identifies the responsibility of federal agencies to protect migratory birds and their habitats, and directs executive departments and agencies to undertake actions that will further implement the Migratory Bird Treaty Act (MBTA). Under the MBTA, incidental, unintentional, and accidental take, killing, or possession of a migratory bird or its parts, nests, eggs or products, manufactured or not, without a permit is unlawful. EO 13186 includes a directive for federal agencies to develop a Memorandum of Understanding (MOU) with the FWS to promote the conservation of migratory bird populations, including their habitats, when their actions have, or are likely to have, a measureable negative effect on migratory bird populations.

For the purpose of this analysis, the term "migratory birds" applies generally to native bird species protected by the MBTA. This includes native passerines (flycatchers and songbirds) as well as birds of prey, migratory waterbirds (waterfowl, wading birds, and shorebirds), and other species such as doves, hummingbirds, swifts, and woodpeckers. The term "migratory" is a misnomer and should be interpreted broadly to include native species that remain in the same area throughout the year as well as species that exhibit patterns of latitudinal or elevational migration to avoid winter conditions of cold or shortage of food. For most migrant and native resident species, nesting habitat is of special importance because it is critical for supporting reproduction in terms of both nesting sites and food. Also, because birds are generally territorial during the nesting season, their ability to access and utilize sufficient food is limited by the quality of the territory occupied. During non-breeding seasons, birds are generally non-territorial and able to feed across a larger area and wider range of habitats.

Among the wide variety of species protected by the MBTA, special concern is usually given to the following groups:

- Species that migrate across long distances, particularly Neotropical migrant passerines that winter in tropical or Southern Hemisphere temperate zones
- Birds of prey, which require large areas of suitable habitat for finding sufficient prey
- Species that have narrow habitat tolerances and hence are vulnerable to extirpation from an area as a result of a relatively minor habitat loss
- Species that nest colonially and hence are vulnerable to extirpation from an area as a result of minor habitat loss

Because of the many species that fall within one or more of these groups, BLM focuses on species identified by FWS as Birds of Conservation Concern (BCC). Table 3 lists BCC documented by FWS to occur in the Central Hardwoods Ozark Mountains region where the proposed SEEO Wilson wells are situated. While none of these species were observed during the site visit, those for whom the habitat is optimal or marginal have the potential to be affected by the proposed project.

Table 3. List of BCC documented by FWS to occur in the Central Hardwoods Ozark Mountains Region.

Species	Suitability of Habitat	Species	Suitability of Habitat
Bald Eagle (b) *Haliaeetus leucocephalus*	Marginal *(not close enough to large water bodies)*	Wood Thrush *Hylocichla mustelina*	Marginal *(inhabits areas with running water)*
Peregrine Falcon *Falco mexicanus*	Marginal *(no cliffs for nest sites)*	Blue-winged Warbler *Vermivora pinus*	Optimal *(prefers fields or regenerating forests)*
Black Rail *Laterallus jamaicensis*	Marginal *(typically found on coastal areas)*	Prairie Warbler *Dendroica discolor*	Optimal *(prefers fields or regenerating forests)*
Solitary Sandpiper (nb) *Tringa solitaria*	Marginal *(freshwater bird found by ditches/ponds)*	Cerulean Warbler* *Dendroica cerulea*	Suitable *(typically found in mature deciduous forests)*
Buff-breasted Sandpiper (nb) *Tryngites subruficollis*	Suitable *(found on short-grass habitats)*	Worm-eating Warbler* *Helmitheros vermivorus*	Marginal *(prefers large deciduous forests)*
Short-eared Owl (nb) *Asio flammeus*	Suitable *(prefers prairies and uninhabited areas)*	Swainson's Warbler *Limnothypis swainsonii*	Marginal *(prefers forests with thick undergrowth)*
Whip-poor-will* *Caprimulgus vociferus*	Suitable *(prefers deciduous or mixed forests)*	Kentucky Warbler* *Oporornis formosus*	Marginal *(prefers deciduous southeastern forests)*
Red-headed Woodpecker *Melanerpes erythrocephalus*	Suitable *(prefers deciduous woodlands)*	Bachman's Sparrow* *Aimophila aestivalis*	Suitable *(inhabits clear cuts and open pine forests)*
Loggerhead Shrike *Lanius ludovicianus*	Suitable *(prefers open land with lookout perches)*	Henslow's Sparrow *Ammodramus henslowii*	Suitable *(found in large flat fields with no woody plants)*
Bell's Vireo (c) *Vireo bellii*	Marginal *(inhabits shrubby and riparian areas)*	LeConte's Sparrow (nb) *Ammodramus leconteii*	Optimal *(winters in Arkansas in hayfields/other grassy areas)*
Brown-headed Nuthatch *Sitta pusilla*	Suitable *(prefers mature pine forests)*	Smith's Longspur (nb) *Calcarius pictus*	Suitable *(prefers short grassy fields and prairies)*

Bewick's Wren* *Thryomanes bewickii*	Marginal *(prefers dry brushy areas and open country)*	Painted Bunting *Passerina ciris*	Marginal *(found in thickets and woodlands by streams)*
Sedge Wren *Cistothorus platensis*	Marginal *(prefer densely vegetated meadows)*	Rusty Blackbird (nb) *Euphagus carolinus*	Marginal *(winters in Arkansas in wet dense forests)*
Legend: (a) ESA Candidate, (b) ESA delisted, (c) non-listed subspecies or population of Threatened or Endangered species, (d) MBTA protection uncertain or lacking, (nb) non-breeding in this region. The * symbol indicates the species is listed as priority bird population with the Partners of Flight program.			

Source: U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp.
[Online version available at http://www.fws.gov/migratorybirds/]

Ch. 4 - ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION AND ALTERNATIVES

Introduction

This chapter assesses potential environmental consequences associated with direct, indirect, and cumulative effects of the Proposed Action and alternatives.

Based on review of the elements listed on the SSDO NEPA Form and consideration of the Purpose and Need statement prepared for this EA, the following elements will be addressed in this EA: Environmental Justice, Cultural Resources, Native American Religious Concerns, Recreation/Visual/Noise Resources, Minerals and Mineral Development, Energy Policy , , Wastes, Hazardous or Solid, Soils, Air Resources, Climate and Climate Change, Water Resources, Surface/Ground, , Wetlands/Riparian Areas/Floodplains, Invasive/Exotic Species, Special Status Species, and Wildlife and Vegetation.

Environmental Justice

No adverse human health and environmental effects will be anticipated that would encompass or affect minority and low-income populations in the area surrounding the well sites discussed in this EA.

Cultural Resources

Impacts to unknown cultural resources may potentially occur with approval of this proposed action. Ground disturbing activities from the development of petroleum reserves can destroy buried sites which are potentially eligible for listing on the National Register of Historic Places. A stipulation covering the possibility of an inadvertent discovery is included. By following the requirements of the stipulation, impacts to any potential site will be minimized.

Native American Religious Concerns

Direct and indirect impacts to known places used by Native Americans for religious activities will not occur, because none are known. However, if such a place and/or a place of religious importance, such as human remains is discovered through activities associated with this proposed action, mineral development activities would be mitigated and a condition of approval will follow.

Recreation/Visual/Noise Resources

The proposed well sites are not near areas used for recreational purposes other than hunting from the private landowner. Because hunting is regulated by the State of Arkansas and wild game in Conway County is plentiful, hunting activities occur only at certain times of the year for each game species by state law. Hunting prohibitions for the well sites would be a short-term, direct impact while drilling but long-term impacts are not expected. Cumulative impacts to hunting wild game in this area should not occur.

The well sites are not visible from any residences. Residences in the area are accustomed to seeing oil and gas activity with no known objections to BLM of such activity. Increased traffic to the well sites will have a short-term impact on visual resources.

Noise generation from well operations would be associated with vehicle movements and the operation of production equipment. Increased traffic to the well sites will have a short-term

impact on noise levels. After drilling operations are completed, minimal traffic for maintenance will be associated with the proposed wells. Impacts from noise on people and wildlife species inhabiting the areas are expected to be minimal and of occasional, short duration for the proposed site.

Minerals and Mineral Development

Based on the figures from the Conn 9-14 #1-34H well (private well previously drilled in T. 9N, R14W, Section 34), stimulation of the new wells for which the BLM has received APDs will require approximately 6,200,000 gallons of water (147,620 Barrels), 18,000 gallons of 15% HCL, and approximately 4,700,000 pounds of sand per well. These wells will have slightly longer laterals than the first wells drilled in the section. Stimulation is usually done in 10 stages of approximately equal volumes. Proper cementing and casing will be required and reviewed by BLM and the State of Arkansas to protect fresh-water zones in the drilling process. This includes approval of the type of equipment used downhole, cementing of the surface casing, and, eventually, proper abandonment of the well. This water will be acquired from a private and/or company owned, permitted pond. Water handling and storing will be by water hauler truck. After final hydraulic fracturing treatment is complete, the resulting flowback and produced water will be contained in holding tanks until it is disposed of properly or reused in another drilling operation. The operator and contractors shall ensure that all use, production, storage, transportation and disposal of produced water associated with the drilling, completion and production of this well will be in accordance with all applicable existing or hereafter promulgated federal, state and local government rules, regulations and guidelines.

Energy Policy

Approving SEECO, Inc.'s wells would be keeping in line with BLM's responsibility for energy development and management. Approving the APDs will ensure that the U.S. government resources are not drained from private drilling in the surrounding area and that production of natural gas provides the U.S. government with appropriate royalties. The Energy Policy Act of 2005 sets forth an energy research and development program covering: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) Indian energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology. Listed below are specific areas of the Act that are applicable to exploitation of the Federal Mineral estate.

Title III: Oil and Gas

Subtitle B: Natural Gas

(Sec. 313) Designates FERC as the lead agency for coordinating federal permits and other authorizations and compliance with the NEPA. Directs FERC to establish a schedule for all federal authorizations.

Subtitle C: Production

(Sec. 322) Amends the Safe Drinking Water Act to exclude from the definition of underground injection the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil or gas, or geothermal production activities.

Subtitle F: Access to Federal Lands
(Sec. 361) Requires the Secretary of the Interior to perform an internal review of current federal onshore oil and gas leasing and permitting practices.
(Sec. 364) Amends the Energy Act of 2000 to revise the requirement that the Secretary of the Interior, when inventorying all onshore federal lands, identify impediments or restrictions upon oil and gas development.
(Sec. 366) Amends the Mineral Leasing Act to set deadlines for an expedited permit application process.
(Sec. 368) Prescribes guidelines governing energy right-of-way corridors on federal land. Directs the Secretaries of Agriculture, of Commerce, of Defense, of Energy, and of the Interior (the Secretaries), in consultation with FERC, states, tribal or local government entities, affected utility industries, and other interested persons, are directed to consult with each other and to: (1) designate corridors for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on federal land in the 11 contiguous Western States; (2) incorporate the designated corridors into the relevant energy land use and resource management or equivalent plans; and (3) ensure that additional corridors are promptly identified and designated.
(Sec. 371) Amends the Mineral Leasing Act to cite conditions for the reinstatement of oil and gas leases terminated for certain failure to pay rentals.

Wastes, Hazardous or Solid
With approval of an APD , the operations for drilling would typically generate the following wastes; (a) discharge of drilling fluids and cuttings into the reserve pits, (b) waste generated from used lubrication oils and hydraulic fluids, some of which may be characteristic of, or listed as, hazardous waste, and (c) service company wastes as well as some general trash. Certain wastes unique to the exploration, development, or production of crude oil and natural gas have been exempted from federal regulation as hazardous waste under Subtitle C of the Resource Conservation and Recovery Act (RCRA) of 1976. The exempt waste must be intrinsic to exploration, development, or production activities and not generated as a part of a transportation or manufacturing operation. The drilling fluids, drill cuttings, and the produced waters are classified as a RCRA exempt waste, and the proposed action would not introduce any hazardous substance into the environment, if they are managed and disposed of properly under federal and state waste management regulations and guidelines.

SEECO's operations will utilize a "closed-loop" system. A small pit will be needed for solid waste but all fluid waste will be contained in large, metal tanks. Any waste fluid will be stored in the metal tanks until trucked to a treatment facility. After the treatment facility, the fluid will be disposed of appropriately or re-used in other drilling operations. No cumulative impacts are anticipated to occur.

Soils
The action of constructing a well pad would have a direct, adverse impact on soils. These impacts would be limited to those areas where vegetation is removed and construction occurs. The impacts would be of two types: (1) physical removal, leveling and mixing of surface soils and (2) soil compaction. The first impact would be caused by site preparation for construction of the well pad, related structures, road construction, flow line construction, and wind and water erosion. This would cause a mixing of soil horizons and cause a short-term loss of soil productivity. The second impact, soil compaction, would be caused by vehicle and machinery travel. Compaction decreases air and water infiltration into the soil profile thus reducing soil

productivity. Prompt cultivation and re-vegetation will be specified in the BLM SUCOA to minimize the loss of soil productivity. This would also prevent an increase of siltation into drainages or streams from run-off. Any further soil impacts would be limited to maintenance of the well site and vehicle traffic. No cumulative impacts would be anticipated to result from this action.

Air Resources

Air quality would be slightly affected locally by exploration, development and abandonment. Dust created during road and well site construction would increase suspended particulates in the air. However, this impact would be localized to the immediate vicinity of the well sites and flow line construction and would be of short duration. Dust from traffic and smoke and other emissions from vehicles and stationary engines used during drilling/completion operations and flow line construction could increase air pollutants, but again, these impacts would be localized and of short duration. Cumulative impacts to air quality should not occur with approval of this action.

Climate and Climate Change

The assessment of greenhouse gas (GHG) emissions, their relationship to global climatic patterns, and the resulting impacts is an ongoing scientific process. It is currently not feasible to know with certainty the net impacts from the proposed action on climate – that is, while BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative given the current state of the science. The BLM does not have the ability to associate a BLM's action contributing to climate change with impacts in any particular area and the science to be able to do so is not yet available. The inconsistency in results of scientific models used to predict climate change on regional or local scales limits the ability to quantify potential future impacts of decisions made at this level and determining the significance of any discrete amount of GHG emissions is beyond the limits of existing science. Because of the vast number of GHG sources worldwide, it's impossible to determine the degree of impact of one project's emissions on global climate change. However, we can acknowledge that certain activities may contribute to climate change through GHG emissions. When further information on the impacts to climate change is known, such information would be incorporated into the BLM's planning and NEPA documents as appropriate.

Wetlands/Riparian Areas/Floodplains:

Any disturbances from mineral development (drilling, hydraulic fracturing, production, etc.) activities would avoid contamination and sedimentation into surrounding drains, creeks, streams, rivers, wetlands and/or springs. For any creek, stream, natural drain, and/or steep terrain, the operator will be required to use silt fencing and other erosion protective practices to minimize anything leaving the well pad before, during, and after construction. Utilizing erosion control measures, cumulative impacts should not occur or be minimal during the construction phase.

Water Quality, Surface/Ground:

Waste fluids associated with oil and gas operations could potentially have an adverse impact on surface and ground waters if allowed to leach into surface and ground water, possibly degrading water quality. SEECO, Inc. informed BLM and it is stated in each APD that all drilling fluids will be contained in tanks due to SEECO, Inc. using a "closed-loop" system and those tanks will be trucked off location and the fluid disposed of at an appropriate facility. The direct contamination of underground sources of drinking water from fractures created by hydraulic

fracturing would require hydrofractures to propagate several thousands of feet beyond the upward boundary of the target formation(s) through many layers of rock. The difference between the base of treatable water and the top of the target formation for the proposed wells is over 3,500 feet, therefore, extremely unlikely that the fractures would ever reach fresh water zones to potentially contaminate freshwater aquifers. Typical flowback from hydraulic fracturing will be processed and reused. No cumulative impacts are anticipated as a result of this action.

Water quality may be affected by indirect effects at a later time or further distance from the triggering management activity. Indirect effects are from management activities that do not have a direct connection to a stream course or water supply. The proposed activities where ground disturbance would occur have potential to adversely affect water quality by increasing sediment levels and changing the chemical and biological characteristics of the water quality. However; impacts from this project are not expected to contribute to degradation of the current water quality.

Invasive/Exotic Species

Surface disturbances can result in increased occurrence of invasive and exotic species. The Natural Resource Conservation Service (NRCS) provides guidelines for mulching, preparation, and planting of vegetation during site restoration (NRCS 1999). Native species are preferred for site restoration. Because of unreliable and/or slow germination and establishment rates of native species, however, site restoration typically is accomplished with a mixture of native and nonnative species. The nonnative species are quickly established to provide erosion control and wildlife support and are slowly replaced by native species (both by species that have been planted and by those recruited).

A Condition of Approval (COA) regarding invasive species applies to this proposal and recommends the use of native grasses for revegetation efforts and requires post-construction monitoring for invasive species. With the implementation of this COA and given that no invasive species were observed during the site visit, the proposed project will likely have no effect on invasive species.

Special Status Species

Table 2 presents the species listed by FWS as endangered, threatened, proposed, delisted or candidate that are documented to occur in Conway County, Arkansas. The table also presents a summary of BLMs determination regarding potential effects on those species from the proposed project.

Table 2. List of federally listed species documented to occur in Conway County, Arkansas by FWS and their potential to occur on the proposed tract.

Species	Federal Status	Determination	Rationale
Florida Panther (*Felis concolor coryi*)	Endangered	No effect	No suitable habitat. Presumed extirpated in AR.
Bald Eagle (*Haliaeetus leucocephalus*)	Delisted	No effect	No suitable habitat.
Piping Plover (*Charadrius melodus*)	Threatened	No effect	No suitable habitat.
Northern Long-eared Bat (*Myotis septentrionalis*)	Threatened	May affect, not likely to adversely affect	Potential suitable foraging and summer roosting habitat present.
Interior Least Tern (*Sterna antillarum athalassos*)	Endangered	No effect	No suitable habitat.

There is no suitable habitat at the proposed site for the Florida panther, bald eagle, piping plover, or interior least tern. As a result, BLM has determined that there will be no effect from the proposed project on these listed species. There is however, suitable foraging and summer roosting habitat at the proposed site for the northern long-eared bat. Direct impacts associated from clearing forested areas for the access road would include: a loss of roost tree availability, a loss of foraging areas, and disturbance created from human noise and activity. Human noise and activity would primarily be limited to the construction, drilling, and completion phases and would diminish during the production phase of the well and therefore would be of short duration. Cumulative effects of oil and gas production in the area would include a short-term reduction of suitable foraging and roosting habitat for this species. Roosting and foraging habitat is available in the surrounding area. Future use of the project site would be dependent on reclamation success and methods. Surface disturbance for the proposed project will occur in the winter. Because there is no winter habitat available for this species on the proposed site, effects from the proposed project would be minimal to none. As a result, BLM has determined that the proposed project may affect, but is not likely to adversely affect the northern long-eared bat.

Informal consultation was initiated with FWS and they concurred with our determination of "no effect" for the Florida panther, bald eagle, piping plover, or interior least tern and may affect, not likely to adversely affect the northern long-eared bat (Appendix C). FWS noted in their concurrence letter that although the bald eagle is not protected under the ESA, it is protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*). Bald eagle management guidelines are available at http://www.fws.gov/southeast/es/baldeagle/.

FWS also noted in their concurrence letter that they "recommend avoiding tree removal by constructing the lease road through the existing pasture to the west of the well pad. This would avoid the need to remove trees and shorten the distance needed to access the well pad by half. If avoiding tree removal is not possible, then minimizing the number of trees removed can be accomplished by locating the road along the tree line and/or limiting road width."

If the timing of the proposed project changes and tree clearing will occur from April 1 and October 15, presence/probable absence surveys for the northern long-eared bat utilizing FWS protocols will be required.

Wildlife and Vegetation

Wildlife species may be disturbed during construction, drilling, or hydraulic fracturing operations, as these activities involve many vehicles, mobile and non-mobile heavy equipment, and numerous noise-producing equipment (i.e. generators, compressors). The most significant impacts would be limited to the construction, drilling, and completion/stimulation phases, which can span from several weeks to several months and is entirely dependent on the size and extent of new surface disturbance, length of the well bore, formations encountered during drilling, and specific completion methodologies used, just to name a few factors. During production, impacts from noise and human disturbance would be less than that associated with construction, drilling, and/or completion operations. In general, most wildlife species would become habituated to the anthropogenic disturbances. For other wildlife species with a low tolerance to activities, the operations on the well pad would continue to displace wildlife from the area due to ongoing disturbances such as vehicle traffic from inspectors and semi-trucks hauling produced fluids, noise from compressors and/or a pump-jack if needed, and equipment maintenance. These impacts would last for the life of the well. Cumulative impacts associated with oil and gas development could include displacement of wildlife species to surrounding areas or a decrease in population viability if suitable habitat is not available in the surrounding area.

Reclamation of well pads could allow for species to use the project site again as long as reclamation creates similar habitats to what was originally there. Wildlife use of the site after the well is put into production would vary depending on vegetation and successional stage. Once put into production, the well pad would be reduced in size and the reserve pit area would be graded and seeded. The producing well site would be subject to regular maintenance and inspection. Wildlife use of the site during and after restoration is likely.

Migratory Bird Species of Concern

Surface disturbance from the development of well pads, access roads, pipelines, and utility lines can result in an impact to migratory birds and their habitat. Cumulative effects on migratory birds could increase if oil and gas development increases in the area. The extent of the effect will be dependent on the amount of increase in development.

FWS estimates that 500,000 to one million migratory birds are killed annually throughout the U.S. in oil field production skim pits, reserve pits, and centralized oilfield wastewater disposal facilities (FWS 2011). Numerous grasshoppers, moths, June bugs, and the like become trapped on the surface in tanks and on pits, and become bait for many species of migratory birds. Open tanks and pits then become traps to many species of birds protected under the MBTA. Properly covered tanks and pits (and regularly inspected covered tanks and pits) is imperative to the continued protection of migratory birds in the well pad area.

To protect perch and roosting sites and terrestrial habitats for and to avoid potential impacts to migratory birds, the following BLM COA applies to this APD:

- Any reserve pit that is not closed within 10 days after a well is completed and that contains water must be netted or covered with floating balls, or another method must be used to exclude migratory birds

- All powerlines must be built to protect raptors and other migratory birds, including bald eagles, from accidental electrocution, using methods detailed by the Avian Power Line Interaction Committee

No Action

There are no environmental impacts associated with the "No Action Alternative". However, selection of that alternative would result in the loss of potential revenue from the proposed development of the gas wells. Future drilling activities from private wells in the area could pose future issues of drainage of federal minerals. The "No Action" decision would not allow the BLM to protect federal mineral interests from drainage of private wells around the BLM lease area.

Cumulative Impacts

Oil and gas development does create an impact that is cumulative as more development occurs. Cumulative sub-surface impacts could occur with more drilling in the area from private and federal wells. Due to spacing requirements set by the State of Arkansas and plugging & abandoning of older wells in the area, cumulative sub-surface impacts are minimal. The well site could have the possibility for additional wells including the five proposed wells in this EA depending on SEECO's future production plans. Having multiple wells on one pad will help curb cumulative surface impacts from future oil and gas development. Proper reclamation occurs when a well site is no longer producing, the well is plugged, abandoned, and the surface is reclaimed in accordance with BLM standards, unless the private landowner has different wishes for surface use after the well is plugged. The cumulative impacts for surface disturbance, currently, are negligible since new disturbance from oil and gas development is minimal and older wells that do not produce any longer are reclaimed.

Preparers and Reviewers:

Prepared by: _____ Date: 9/28/15
Brian Kennedy
Physical Scientist (Lead)

Prepared by: _____ Date: 9-28-15
John Sullivan
Archaeologist/Tribal Coordinator

Prepared by: _____ Date: 9/28/15
Alison McCartney
Planning and Environmental Coordinator

Reviewed by: _____ Date: 9/28/2015
Faye Winters
Wildlife Biologist

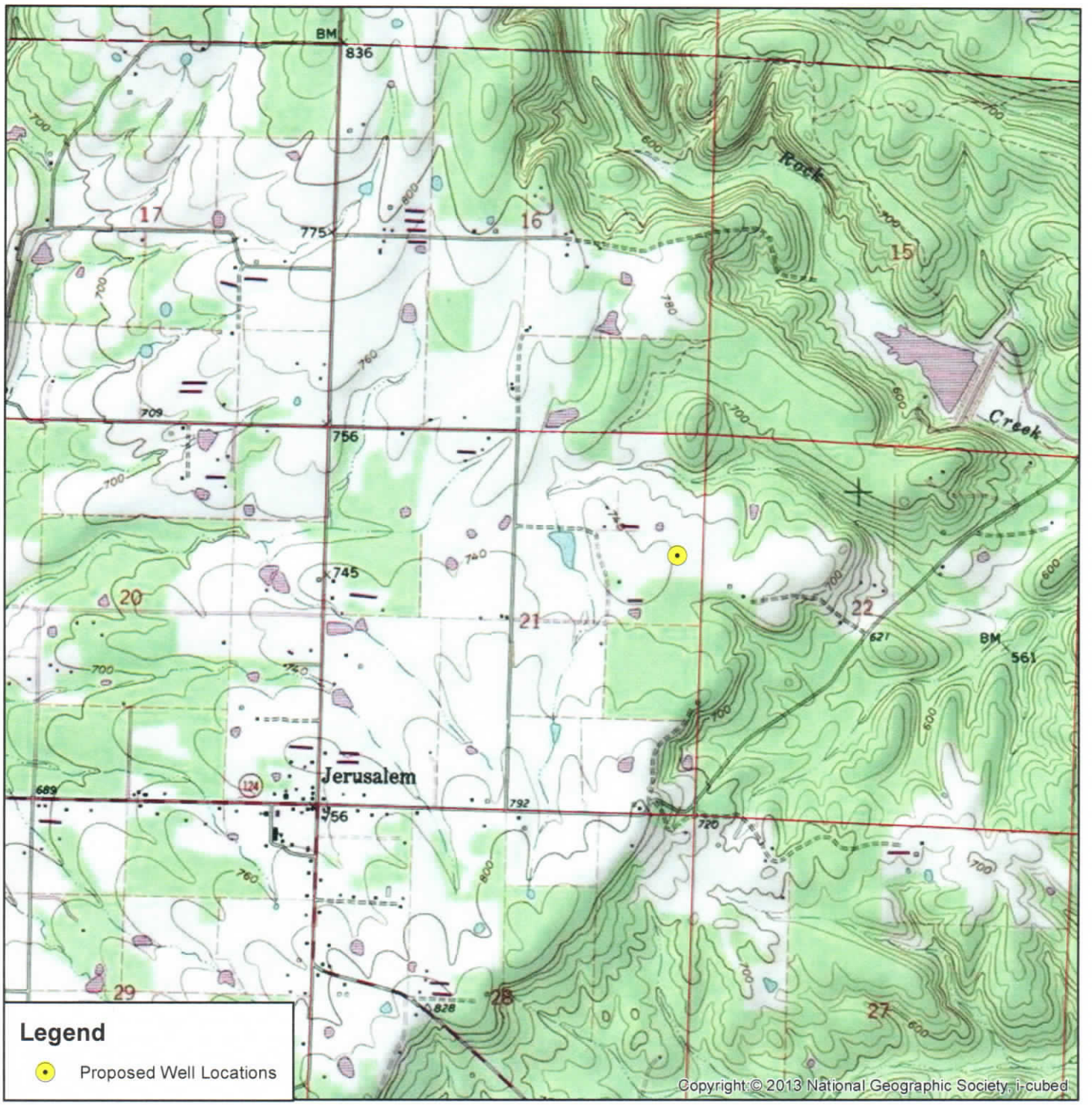
Reviewed by: _____ Date: 9-28-2015
Duane Winters
ADM for Natural Resources

Reviewed by: _____ Date: 9/29/15
Elizabeth Ivy
ADM for Minerals

APPENDIX A

Maps

Proposed Federal Oil & Gas Wells
Company: SEECO
Well Names: Wilson 9-17 #9-21H23 through #13-21H23
Conway County, Arkansas
T. 9N, R. 17W, Sec. 21; 5th Principal Meridian



Proposed: Wilson 9-17 #9-21H23 Well:
(T9N, R17W, Sec 21 - 1675' FNL & 355' FEL)

Proposed: Wilson 9-17 #10-21H23 Well:
(T9N, R17W, Sec 21 - 1695' FNL & 355' FEL)

Proposed: Wilson 9-17 #11-21H23 Well:
(T9N, R17W, Sec 21 - 1655' FNL & 355' FEL)

Proposed: Wilson 9-17 #12-21H23 Well:
(T9N, R17W, Sec 21 - 1635' FNL & 355' FEL)

Proposed: Wilson 9-17 #13-21H23 Well:
(T9N, R17W, Sec 21 - 1615' FNL & 355' FEL)

0 1,000 2,000 4,000 6,000 8,000 Feet

1:24,000

N

U.S. Department of the Interior
Bureau of Land Management
Southeastern States Field Office
Jackson, Mississippi

This map contains portions of the following USGS 1:24,000
Topographic Quadrangle: Jerusalem

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual use or aggregate use with other data.

APPENDIX B

Surface Use Conditions of Approval

Bureau of Land Management's
Surface Use Conditions of Approval (SUCOA)

Section 17, T. 9 N., R. 17 W., 5th Principal Meridian, Conway County, Arkansas on BLM Lease ARES-54981

Well: Wilson 9-17 #9-21H23 through #13-21H23

1. If previously unknown sites of religious activities and previously unknown Native American burials are discovered during any ground disturbing activity or any part of this action, these activities will cease so that consultation with appropriate Native American groups will take place. The Authorizing Officer will tell the operator within five (5) working days when or if work may proceed.

2. The operator will avoid known cultural/historic sites during all construction and will be held responsible for informing all persons working at the drill site that they are subject to prosecution for knowingly disturbing human remains, historic or archaeological sites and for collecting artifacts (Archaeological Resources Protection Act of 1979, as amended [16 United States Code 470] [43 CFR 7.4]). If human remains, historic or archaeological materials are uncovered during construction, the operator will immediately stop work that might further disturb such materials and contact the BLM, the landowner, and the State Historic Preservation Officer (SHPO) (36 CFR 800.11(b)(3)). Within five working days, the BLM, in consultation with the landowner and the SHPO, will inform the operator as to options available and how/if operation in the area of the human remains, historic or archaeological material may proceed. In addition, if a previously unknown site is discovered, consultation with the Advisory Council on Historic Preservation and Native American groups may also be conducted before operations may proceed.

3. The operator is required to take necessary measures to ensure that the final graded slopes are stabilized and to prevent the movement of soil from the pad area for the life of the project. Because of the short term nature of the project and to allow for complete decomposition, only all organic fibers including both the filler and web will be used to allow for complete decomposition. This could include the use of natural matting (jute, coconut fiber, etc.) on steeper slopes and/or use of silt fence at the toe of the slope, or additional mulching. No plastic or inorganic netting will be permitted. Silt fences and other sediment control objects must be maintained throughout the construction and initial phases of drilling and production. After seeding of natural grasses has taken hold to stop erosion of sediments off the pad location, such sediment control devices can be removed.

4. Any construction activities should, by using preventative measures, avoid drainage of fluids, sediments, and/or other contaminants from the well pad into any nearby water bodies or natural drainage areas off of the well pad location.

5. Equipment, fuels, and other chemicals will be properly stored to minimize the potential for spills to enter surface waters. Secondary containment will be provided for all containers stored on site.

6. For safety and protection to the surface and surrounding area, operator must keep the area clean of trash and other debris as much as possible to avoid damaging or contaminating the human and environmental health surrounding the well pad location.

7. No aerial application of herbicides or pesticides will be permitted. Any ground application of herbicides or other pesticides, sterilants, or adjuvants within 150 feet of listed species or habitat will require site-specific control measures developed in coordination or formal consultation with USFWS.

8. To prevent birds and bats from entering or nesting in or on open vent stack equipment, open vent stack equipment, such as heater-treaters, separators, and dehydrator units, will be designed and constructed to prevent birds and bats from entering or nesting in or on such units and, to the extent practical, to discourage birds from perching on the stacks. Installing cone-shaped mesh covers on all open vents is one suggested method. Flat mesh covers are not expected to discourage perching and will not be acceptable.

9. All power-lines must be built to protect raptors and other migratory birds, including bald eagles, from accidental electrocution, using methods detailed by the Avian Power Line Interaction Committee (APLIC 2006)

10. Any reserve pit that is not closed within 10 days after a well is completed and that contains water must be netted or covered with floating balls, or another method must be used to exclude migratory birds.

11. Disturbed lands will be re-contoured back to conform to existing undisturbed topography. No depressions will be left that trap water or form ponds. The operator will be responsible for re-contouring of any subsidence areas that may develop from after closing of the pit.

12. To discourage the spread of invasive, non-native plants, BLM advises that native cover plants in seeding mixtures be used during reclamation activities. Final seed mixtures will be formulated in consultation with the private landowner. Post-construction monitoring for cogon grass and other invasive plant species should be conducted to ensure early detection and control. If invasive species are found, the proper control techniques should be used to either eradicate the species from the area or minimize its spread to other areas. If cogon grass is found on site, equipment should be washed before exiting the site to prevent the spread of this highly invasive species to other locations.

Before interim and final reclamation of the well site, SEECO, Inc. will contact BLM for advisement of native seed mixtures to be planted with landowner coordination. BLM will also require post-construction monitoring for invasive species.

13. Phased reclamation plans will be submitted to BLM for approval prior to abandonment via a Notice of Intent (NOI) Sundry Notice. Individual facilities, such as well locations, pipelines, discharge points, impoundments, etc. need to be addressed in these plans as they are no longer needed. BLM will inspect those reclamation actions submitted by the operator to ensure that the operator has met all reclamation goals of the BLM and surface owner. A Notice of Intent to Abandon and a Subsequent Report of Abandonment must be submitted for abandonment approval by BLM. Final Abandonment Notice will be filed at the end awaiting BLM's approval of final reclamation. After BLM's approval of final reclamation, operator can be relinquished of its obligations and responsibilities to the well site.

APPENDIX C

Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
110 S. Amity Road, Suite 300
Conway, Arkansas 72032
Tel.: 501/513-4470 Fax: 501/513-4480

IN REPLY REFER TO

July 21, 2015

Alison McCartney
Bureau of Land Management
411 Briarwood Drive, Suite 404
Jackson, MS 39206

Dear Ms. McCartney:

The US Fish and Wildlife Service (Service) has reviewed the information supplied in your letter, dated July 17, 2015, regarding the proposed Application for Permit to Drill for a well site and lease road location near the city of Jerusalem in Conway County, Arkansas. Our comments are submitted in accordance with the Endangered Species Act (ESA; 87 Stat. 884, as amended 16 U.S.C. 1531 et seq.), Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), and Fish and Wildlife Coordination Act (48 Stat. as amended; 16 U.S.C. et seq.).

The Service understands that tree removal will occur during the winter, therefore, the proposed project may affect, but is not likely to adversely affect the proposed endangered Northern Long-eared Bat *(Myotis septentrionalis)* (NLEB). The Service concurs with your determination that the proposed project will have no effect on the Piping Plover (*Charadrius melodus*) and Interior Least Tern (*Sterna antillarum athalassos*).

Please be aware Bald Eagle is not protected under the ESA. Bald Eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*). Bald Eagle management guidelines are available at http://www.fws.gov/southeast/es/baldeagle/.

We appreciate your interest in the conservation of endangered species. If you have any questions, please contact Tommy Inebnit at (501) 513-4483.

Sincerely,

Melvin Tobin
Project Leader

United States Department of the Interior

FISH AND WILDLIFE SERVICE
110 S. Amity Road, Suite 300
Conway, Arkansas 72032
Tel.: 501/513-4470 Fax: 501/513-4480

IN REPLY REFER TO

March 10, 2015

Alison McCartney
Bureau of Land Management
411 Briarwood Drive, Suite 404
Jackson, MS 39206

Dear Ms. McCartney:

The US Fish and Wildlife Service (Service) has reviewed the information supplied in your letter, dated January 22, 2015, regarding the proposed Notice of Staking for a well site and lease road location near the city of Jerusalem in Conway County, Arkansas. Our comments are submitted in accordance with the Endangered Species Act (ESA; 87 Stat. 884, as amended 16 U.S.C. 1531 et seq.), Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), and Fish and Wildlife Coordination Act (48 Stat. as amended; 16 U.S.C. et seq.).

The Service concurs with your determination that the proposed project may affect, but is not likely to adversely affect the proposed endangered Northern Long-eared Bat *(Myotis septentrionalis)* (NLEB). The Service concurs with your determination that the proposed project will have no effect on the Piping Plover (*Charadrius melodus*), and Interior Least Tern (*Sterna antillarum athalassos*).

Please be aware Bald Eagle is not protected under the ESA. Bald Eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*). Bald Eagle management guidelines are available at http://www.fws.gov/southeast/es/baldeagle/.

The Northern long-eared bat (*Myotis septentrionalis*) (NLEB) is currently proposed for federal listing under ESA. No critical habitat has been proposed for the NLEB. The state of Arkansas is considered to be within the known range of NLEB. During the summer, NLEBs typically roost singly or in colonies in a wide variety of forested habitats, in cavities or crevices or underneath loose bark of both live trees and snags (>3 inches dbh). NLEBs have also been documented roosting in man-made structures (*i.e.*, buildings, barns, etc.) during the summer. They forage for insects in upland and lowland woodlots and tree lined corridors. During the winter, NLEBs hibernate in caves and abandoned mine portals.

Pursuant to Section 7(a)(4) of the ESA, federal action agencies are required to confer with the Service if they determine a proposed federal action is likely to jeopardize the continued existence of the NLEB (50 CFR 402.10(a)). Although species proposed for listing are not afforded protection under the ESA, when a species is listed, the prohibitions against jeopardizing its continued existence and unauthorized "take" are effective 30 days after a final rule publishes in

the Federal Register, **regardless of an action's stage of completion**. Therefore, if suitable NLEB habitat is present within the proposed project area, we recommend further coordination to determine if the species may be present and if effects are likely to cause project delays.

According to the biological assessment, tree removal will occur as a result of this project. Should the NLEB be listed, tree clearing between April 1 and October 15 will require a survey. Should surveys be required, our office can provide additional assistance in developing survey methodology. However, the Service recommends avoiding tree removal by constructing the lease road through the existing pasture to the west of the well pad. This would avoid the need to remove trees and shorten the distance needed to access the well pad by half. If avoiding tree removal is not possible, then minimizing the number of trees removed can be accomplished by locating the road along the tree line and/or limiting road width.

We appreciate your interest in the conservation of endangered species. If you have any questions, please contact Tommy Inebnit at (501) 513-4483.

Sincerely,

Melvin Tobin
Acting Project Leader

Sullivan, John <j35sullivan@blm.gov>

Section 106 Review

HPO <HPO@chickasaw.net> Tue, Mar 10, 2015 at 11:41 AM
To: "john_m_sullivan@blm.gov" <john_m_sullivan@blm.gov>

Mr. Bruce Dawson, Field Manager

United States Department of the Interior

Bureau of Land Management

411 Briarwood Drive, Suite 404

Jackson, MS 39206

Dear Mr. Dawson:

Thank you for the letters of notification regarding the proposed projects delineated in the below table for Sebastian and Conway County, Arkansas.

The Chickasaw Nation supports the proposed undertakings and is presently unaware of any specific historic properties, including those of traditional religious and cultural significance, in the project areas. In the event the agency becomes aware of the need to enforce other statutes we request to be notified under ARPA, AIRFA, NEPA, NAGPRA, NHPA and Professional Standards.

We appreciate your efforts to preserve and protect significant historic properties. If you have any questions, please contact Dr. Timothy Baugh, tribal historic preservation officer, at (580) 272-1106 or timothy.baugh@chickasaw.net.

Sincerely,

Lisa John, Secretary

Department of Culture & Humanities

cc: john_m_sullivan@blm.gov

Proposed Project Description:	Location:
8160 (020) JMS SEECO / Southwestern Energy, Inc., Wilson 9-17 #9-12H23-13-21H23-APD. Application for permit to drill by SEECO, Inc. / Southwestern Energy for five wells	Conway County Arkansas
8100 (020) JMS SEECO Energy, Inc., SPC USA #3-9 APD. Application for permit to drill by SEECO, Inc. /Southwestern Energy.	Sebastian County, Arkansas
8160 (020) JMS Stevens Reserve #1-36 Lateral Pipeline. Re-route pipeline by Stephens Production Company	Sebastian County, Arkansas.

Sullivan, John <j35sullivan@blm.gov>

RE: Wilson Wells APD Conway Co AR

1 message

Lindsey Bilyeu <lbilyeu@choctawnation.com> Thu, Mar 26, 2015 at 1:47 PM
To: "Sullivan, John" <j35sullivan@blm.gov>

John,

The Choctaw Nation of Oklahoma thanks the BLM for the correspondence regarding the above referenced project. This project lies outside of the Choctaw Nation's area of historic interest in Conway Co., AR. The Choctaw Nation Historic Preservation Department respectfully defers to the other Tribes that have been contacted.

If you have any questions, please contact me at 580-924-8280 ext. 2631.

Thank you,

Lindsey D. Bilyeu

NHPA Senior Section 106 Reviwer

Historic Preservation Department

Choctaw Nation of Oklahoma

P.O. Box 1210

Durant, OK 74701

580-924-8280 ext. 2631

lbilyeu@choctawnation.com

From: Sullivan, John [mailto:j35sullivan@blm.gov]
Sent: Thursday, February 26, 2015 10:58 AM
To: Ian Thompson; Lindsey Bilyeu
Subject: Wilson Wells APD Conway Co AR

Please let me know if you've got any questions.

Thanks

jms

–

John M. Sullivan, RPA
Detail at New Mexico State Office

Eastern States Office
State Archaeologist/Tribal Coordinator
Deputy Preservation Officer
411 Briarwood Dr., Suite 404
Jackson MS 39206

601-977-5439
601-717-3600 (Cell)
601-977-5440 (Fax)

Sullivan, John <j35sullivan@blm.gov>

Re: Wilson Wells APD Conway Co AR

Charles Coleman <chascoleman75@yahoo.com> Wed, Mar 4, 2015 at 6:34 AM
Reply-To: Charles Coleman <chascoleman75@yahoo.com>
To: "Sullivan, John" <j35sullivan@blm.gov>

Subject: Wilson Wells, Conway Arkansas

John,

Thlopthlocco Tribal Town has an historical and cultural interest in the proposed Well Site's Area of Potential Effect . I have read your description of the site and reviewed known Thlopthlocco historical, cultural, and sites of religious significance, in the area and concur with PanAmerican that the construction should not have an adverse effect .

Thlopthlocco Tribal Town has no objection to the proposed Wilson Well Site construction in Conway, Arkansas.

Please beware of the fact that all locations of Thlopthlocco Historical, Cultural, and sites of religious significance are not known, if an inadvertent discovery is made of American Indian artifacts or artifacts or remains, please notify the Tribe.

If American Indian artifacts or remains are recovered from a site and sent to the shed, Please remember; America's youth can not learn historical and cultural past from items left in the shed. MVTO

Sincerely

Charles Coleman, THPO
Thlopthlocco Tribal Town

On Thursday, February 26, 2015 10:58 AM, "Sullivan, John" <j35sullivan@blm.gov> wrote:

Please let me know if you've got any questions.

Thanks
jms

--
John M. Sullivan, RPA

Sullivan, John <j35sullivan@blm.gov>

Southwestern Drill Permit Conway County

1 message

Lisa LaRue-Baker - UKB THPO <ukbthpo-larue@yahoo.com> Thu, Mar 19, 2015 at 10:44 AM
Reply-To: Lisa LaRue-Baker - UKB THPO <ukbthpo-larue@yahoo.com>
To: "john_m_sullivan@blm.gov" <john_m_sullivan@blm.gov>
Cc: Holly Noe <hnoe@unitedkeetoowahband.org>

The United Keetoowah Band of Cherokee Indians in Oklahoma has reviewed your project under Section 106 of the NHPA, and at this time, have no comments or objections. However, if any human remains are inadvertently discovered, please cease all work and contact us immediately.
The UKB reserves the right to re-enter consultation on this project at any time.

Thank you,

Lisa C. Baker
Acting THPO
United Keetoowah Band of Cherokee Indians in Oklahoma
PO Box 746
Tahlequah, OK 74465

c 918.822.1952
ukbthpo-larue@yahoo.com

Please FOLLOW our historic preservation page and LIKE us on FACEBOOK

Sullivan, John <j35sullivan@blm.gov>

Re: Wilson Wells APD Conway Co AR

1 message

Lisa LaRue-Baker - UKB THPO <ukbthpo-larue@yahoo.com> Wed, Mar 4, 2015 at 12:11 PM
Reply-To: Lisa LaRue-Baker - UKB THPO <ukbthpo-larue@yahoo.com>
To: "Sullivan, John" <j35sullivan@blm.gov>
Cc: Holly Noe <hnoe@unitedkeetoowahband.org>

The United Keetoowah Band of Cherokee Indians in Oklahoma has reviewed your project under Section 106 of the NHPA. At this time, we have no comments or objections. If any human remains should be inadvertently discovered, please cease all work and contact us immediately.

The United Keetoowah Band of Cherokee Indians in Oklahoma retains the right to re-enter consultation on this project at any time.

Thank you,

Lisa C. Baker
Acting THPO
United Keetoowah Band of Cherokee Indians in Oklahoma
PO Box 746
Tahlequah, OK 74465

c 918.822.1952
ukbthpo-larue@yahoo.com

Please FOLLOW our historic preservation page and LIKE us on FACEBOOK

On Thursday, February 26, 2015 10:58 AM, "Sullivan, John" <j35sullivan@blm.gov> wrote:

Please let me know if you've got any questions.

THE DEPARTMENT OF ARKANSAS
HERITAGE

Asa Hutchinson
Governor

Stacy Hurst
Director

Arkansas Arts Council
•
Arkansas Natural Heritage Commission
•
Delta Cultural Center
•
Historic Arkansas Museum
•
Mosaic Templars Cultural Center
•
Old State House Museum

Arkansas Historic Preservation Program

323 Center Street, Suite 1500
Little Rock, AR 72201

(501) 324-9880
fax: (501) 324-9184
tdd: 711

e-mail:
info@arkansaspreservation.org
website:
www.arkansaspreservation.com

An Equal Opportunity Employer

March 12, 2015

Mr. C. Andrew Buchner
Vice President and Memphis Branch Manager
Panamerican Consultants, Inc.
91 Tillman Street
Memphis, Tennessee 38111

MAR 2015

Re: Conway County – Jerusalem
Section 106 Review – BLM
Report Titled *SWN Cultural Resources Reports Volume 71: Phase I Cultural Resources Survey of the Proposed Wilson 9-17 #9-12H23 – 13-21H23 Well Site, Lease Road, and Gathering Line, Conway County, Arkansas*
Panamerican Report Number 34207
AHPP Tracking Number 92389

Dear Mr. Buchner:

The staff of the Arkansas Historic Preservation Program has reviewed the above-referenced cultural resources survey report. This report documents fieldwork for proposed wells, and access road, and a gathering line and is acceptable. Based on the information presented in this report, we concur that the proposed undertaking will have no effect on historic properties.

Thank you for the opportunity to review this undertaking. Please refer to the AHPP Tracking Number listed above in all correspondence. If you have any questions, please call Eric Gilliland of my staff at 501-324-9270.

Sincerely,

Frances McSwain

Frances McSwain
Deputy State Historic Preservation Officer

cc: Ms. Lisa C. Baker, United Keetoowah Band of Cherokee Indians in Oklahoma
Mr. Everett Bandy, Quapaw Tribe of Oklahoma
Dr. Timothy Baugh, Chickasaw Nation
Dr. Ann Early, Arkansas Archeological Survey
Dr. Andrea Hunter, Osage Nation
Mr. John M. Sullivan, BLM

Sullivan, John <j35sullivan@blm.gov>

RE: Wilson Wells APD Conway Co AR

1 message

Kim Jumper <kim.jumper@shawnee-tribe.com> Tue, Mar 24, 2015 at 2:54 PM
To: "Sullivan, John" <j35sullivan@blm.gov>

This letter is in response to the above referenced project.

The Shawnee Tribe's Tribal Historic Preservation Department concurs that no known historic properties will be negatively impacted by this project. We have no issues or concerns at this time, but in the event that archaeological materials are encountered during construction, use, or maintenance of this location, please re-notify us at that time as we would like to resume consultation under such a circumstance.

Thank you for giving us the opportunity to comment on this project.

Sincerely,

Kim Jumper, THPO

Shawnee Tribe

From: Sullivan, John [mailto:j35sullivan@blm.gov]
Sent: Thursday, March 12, 2015 4:26 PM
To: kim.jumper@shawnee-tribe.com
Subject: Wilson Wells APD Conway Co AR

If you have any questions please let me know.

Thanks

jms

–

John M. Sullivan, RPA
Detail at New Mexico State Office

Eastern States Office
State Archaeologist/Tribal Coordinator
Deputy Preservation Officer
411 Briarwood Dr., Suite 404
Jackson MS 39206

601-977-5439
601-717-3600 (Cell)
601-977-5440 (Fax)

image001.jpg
136K

TRIBAL HISTORIC PRESERVATION OFFICE

Date: **March 2, 2015** **File: 1415-1331AR-2**

RE: **BLM 8160(020) JMS SEECO/Southwestern Energy, Inc., Wilson 9-17 #9-12H23 - 12-21H23 APDs, Conway County, AR**

Bureau of Land Management
John Sullivan
411 Briarwood Drive, Suite 404
Jackson, MS 39206

Dear Mr. Sullivan,

The Osage Nation Historic Preservation Office has evaluated your submission regarding the proposed BLM 8160 (020) JMS SEECO/Southwestern Energy, Inc., Wilson 9-17 #9-12H23 - 12-21H23 APDs, Conway County, AR and determined that the proposed project most likely **will not adversely affect properties of cultural or sacred significance to the Osage Nation. The finding of this NHPA Section 106 review has resulted in a determination of "No Properties."**

In accordance with the National Historic Preservation Act, (NHPA) [54 U.S.C. § 300101 et seq.] 1966, undertakings subject to the review process are referred to in 54 U.S.C. § 302706 (a), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969). **The Osage Nation concurs that as a part of the scoping process the U.S. Department of the Interior fulfilled NHPA and NEPA compliance by consulting with the Osage Nation Historic Preservation Office in regard to the proposed project referenced as BLM 8160(020) JMS SEECO/Southwestern Energy, Inc., Wilson 9-17 #9-12H23 - 12 -21H23 APDs, Conway County, AR.**

The Osage Nation has vital interests in protecting its historic and ancestral cultural resources. We do not anticipate that this project will adversely impact any cultural resources or human remains protected under the NHPA, NEPA, the Native American Graves Protection and Repatriation Act, or Osage law. **If, however, artifacts or human remains are discovered during project construction, we ask that work cease immediately and the Osage Nation Historic Preservation Office be contacted.**

Should you have any questions or need any additional information please feel free to contact me at the number listed below. Thank you for consulting with the Osage Nation on this matter.

Andrea A. Hunter, Ph.D.
Director, Tribal Historic Preservation Officer

Zuzana Chovanec, Ph.D.
Archaeologist

627 Grandview, Pawhuska, OK 74056, (918) 287-5328, Fax (918) 287-5376

MUSCOGEE (CREEK) NATION

Cultural Preservation — Johnnie Jacobs – Manager

February 27, 2015

Mr. Bruce Dawson,
Field Manager
U.S. Department Of Interior
Bureau of Land Management
Southeastern States Office
411 Briarwood Drive, Suite 404
Jackson, MS. 39206

RE: 8160(020) JMS JMS SEECO/Southwestern Energy
6 Permits to Drill- Federal Oil Lease
Section 21, T9N, R17W
Conway Co., ARK

Dear Mr. Dawson,

Thank you for contacting the Muscogee (Creek) Nation Cultural Preservation Office in reference to your request for comments regarding the above project.

After review of the material provided, it has been determined that the above referenced project is not within the area of interest of the Muscogee (Creek) Nation. We will defer to tribes that may have an interest in this location for comment.

Should further information or comment be required please do not hesitate to contact me at (918) 732-7732 or by electronic mail at davidp@mcn-nsn.gov. Thank you.

Sincerely,

David J. Proctor
Muscogee (Creek) Nation
Cultural Preservation Dept.

COUSHATTA TRIBE
OF LOUISIANA

HERITAGE DEPARTMENT

March 6, 2015

John Sullivan
State Archeologist
US Dept. of the Interior
411 Briarwood Drive, Suite 404
Jackson, MS 39206

Subject: 8100 (020) JMS JMS SEECO/Southwestern Energy, Inc., Wilson 9-17 #9-12H2-13-21H23 APD's

Dear Mr. Sullivan:

The Coushatta Tribe of Louisiana Heritage Department has reviewed the above reference proposed undertaking, and we are in concurrence with your findings of "no historical properties affected".

At this time, I know of no known sacred or ceremonial sites in the immediate area, and do not require further Section 106 consultation on this project. However, if any cultural resources such as, bone, pottery, stone tools, etc., are found subsequently, we may elect to discuss additional mitigation steps, including on-site monitoring. In the event that archaeological properties or human remains are discovered, please stop work and contact us immediately, consistent with Section IX of the Nationwide Programmatic Agreement and applicable laws.

Sincerely,

Jill Crawford

Jill Crawford,
Section 106 Coordinator

337-584-1560 337-584-1616 (FAX) PO BOX 10 ELTON, LA 70532

APPENDIX D

References

References Cited:

United States Department of Agriculture, Natural Resource Conservation Service. http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

U.S. Fish and Wildlife Service (USFWS), Southeast Region. http://www.fws.gov/southeast/

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Pennsylvania Game Commission. 2014. Map of WNS Occurrence by County/District. PA Game Commission.

U.S. Department of Interior, U.S. Fish and Wildlife Service. 2011. Bird Mortality in Oil and Gas Production Facilities Can be Prevented. U.S. Fish and Wildlife Service. News Release. Lakewood, Colorado.

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FINDING OF NO SIGNIFICANT IMPACT/DECISION RECORD

FINDING OF NO SIGNIFICANT IMPACT

Based on the analysis of potential environmental impacts contained in the attached environmental assessment (EA), I have determined that the proposed action, with the mitigation measures and stipulations described under "Surface Use Conditions of Approval" (SUCOA), will not have any significant impacts on the human environment, and an environmental impact statement (EIS) is not required.

DECISION RECORD

It is my decision to authorize the Wilson 9-17 #9-21H23, Wilson 9-17 #10-21H23, Wilson 9-17 #11-21H23, Wilson 9-17 #12-21H23, and Wilson 9-17 #13-21H23 APDs submitted by SEECO, Inc. in Conway County, Arkansas to flow natural gas produced from BLM's federal oil and gas lease: ARES-54981. Each APD was reviewed and accepted under NEPA guidelines and policy. The applicant's surface protection procedures, set forth in the proposed action, are included in the application and need not be formulated into stipulations. Measures identified for the proposed action in the environmental impact section of the EA have been formulated into SUCOA. SEECO, Inc. will adhere and follow said SUCOAs for all proposed APDs as part of their permit's approval. This decision incorporates by reference those measures and conditions addressed in the EA for approval of the five APDs submitted to BLM by SEECO, Inc.

RATIONALE FOR DECISION

The decision to allow the proposed action does not result in any undue or unnecessary environmental degradation and is in conformance with applicable plans.

Authorized Officer: Brian Davis Date: 9/29/2015